

TECHNICAL ASSISTANCE TEAM  
QUALITY ASSURANCE SAMPLING PLAN

AUBURN, WASHINGTON INK SITE  
AUBURN, WASHINGTON

TDD T10-9010-049

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DATE: JANUARY 1991

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SUPERFUND RESPONSE AND INVESTIGATION SECTION  
U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION X  
SEATTLE, WASHINGTON

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QUALITY ASSURANCE SAMPLING PLAN  
Ecology and Environment, Inc.

Project Name: Auburn, Washington Ink Site  
Contract No: 68-WO-0037  
TDD: T10-9010-049  
Date: January 1991

Key Project Personnel

EPA OSC: Carl Kitz, EPA, Seattle  
TAT Leader: William L. Carberry, E & E, Seattle  
TAT Project Manager: David Schuchardt, E & E, Seattle  
Data Quality Review: Michael Bray, E & E, Seattle  
System Performance Audit: E & E Quality Assurance Group,  
Buffalo, N.Y.

Approvals

Project Manager	_____	Date	_____
TATL	<i>Wm L Carberry</i>	Date	<i>1/18/91</i>
OSC/SRIS Reviewer	_____	Date	_____

TAT Sample Numbers: T0110001 to T0110030

Laboratory Designation: Commercial Laboratory

## TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
1.0 BACKGROUND .....	1
2.0 PROJECT OBJECTIVES .....	1
3.0 QA OBJECTIVES .....	3
3.1 Analytical QA Objectives .....	3
3.2 Levels of Data Quality Objectives .....	3
4.0 METHODOLOGIES .....	4
4.1 Schedule of Work .....	4
4.2 Sampling .....	5
4.2.1 Sampling Rationale .....	5
4.2.2 Approach .....	6
4.2.3 Sample Homogenization .....	6
4.2.4 Volatile Organic Samples .....	6
4.2.5 BNA Organic Samples .....	6
4.2.6 Inorganic Samples .....	7
4.3 Sample Types and Quantities .....	7
4.4 Investigation-Derived Debris .....	7
5.0 PROJECT ORGANIZATION AND RESPONSIBILITIES .....	7
6.0 QA/QC REQUIREMENTS .....	9
6.1 Analytical Parameters .....	9
6.2 QC Measures .....	9
6.3 Data QA Review .....	11
6.4 Precision, Accuracy, and Completeness .....	11
7.0 DELIVERABLES .....	12
8.0 DATA VALIDATION .....	13
9.0 BIBLIOGRAPHY .....	13

### APPENDICES

- A. SUPPLEMENTAL INFORMATION
- B. SUPPLEMENTAL FORMS
- C. EXAMPLE: LETTER OF AGREEMENT FOR LABORATORY QA/QC PROCEDURES

### FIGURE

- 1. Site Location Map: Auburn, Washington Ink Site ..... 2

### TABLES

- 1. Proposed Schedule of Work ..... 5
- 2. Field Sample Summary ..... 8
- 3. QA/QC Analysis and Objective Summary ..... 10

QUALITY ASSURANCE SAMPLING PLAN  
Auburn, Washington Ink Site  
TDD T10-9010-049

## 1.0 BACKGROUND

Ecology and Environment, Inc. (E & E) is the designated Technical Assistance Team (TAT) contractor to the U.S. Environmental Protection Agency (EPA). The EPA Region X Superfund Response and Investigations Section (SRIS) has tasked E & E to investigate the report of drums containing inks and glue, located outside the building at 222 A Street in Auburn, Washington.

This quality assurance sampling plan (QASP) has been developed, and is to be implemented, in conjunction with the Region 10 TAT QA Project Plan (QAPjP) (E & E 1990) to address the sampling QA issues relevant to TAT sampling activities (EPA 1990b) in support of SRIS at the Auburn, Washington Ink Site.

A brief summary of the site background is presented below. Expansion on the information in this summary, if required by the EPA or deemed necessary by the project manager, is included in Appendix A. The site is located in the city of Auburn, in King County, in the State of Washington (Figure 1). The nearest residences are located within 20 yards of the site. Another significant environment in the proximity of the site is the Green River, located 1.8 miles to the east.

The types of materials believed to be present at the Auburn Washington Ink Site are inks, glues, and other unknown chemical compounds. Contaminants of concern may include toluene, xylenes, alcohols, amines, and heavy metals at unknown concentrations.

## 2.0 PROJECT OBJECTIVES

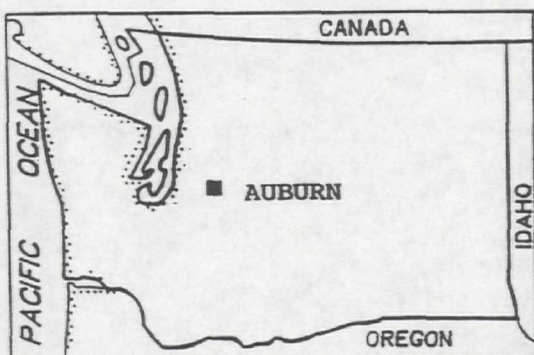
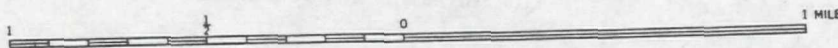
The objectives of the proposed field activities are to:

- o characterize soil and drum contents for the following:
  - magnitude/extent of contamination determination,
  - enforcement support,
  - disposal/treatment evaluation;
- o evaluate the public health and/or environmental threat posed by the contamination at the site; and,
- o evaluate the need for a removal action.

The data will be evaluated against federal/state action levels of detected contaminants.

To accomplish these objectives, the TAT will obtain background information and site documentation (e.g., photographs, maps) as required to characterize the site. The TAT plans to conduct the following activities:

- o review existing state, local files; and
- o collect and arrange analyses for soil, sediment, water, air, and drum samples.



**ecology & environment, inc.**

Job: T19-9010-049

Site: WA 0647

Drawn by: DS

Date: Nov. 8, 1990

## FIGURE 1 SITE LOCATION MAP

2 AUBURN, WASHINGTON  
INK SITE

Elaboration of the planned activities may be necessary based on the information attained through the site assessment process.

All sampling, analysis, and data interpretation are to be conducted within the framework of this document. Sampling and analytical requirements and the level of QA review for the project have been established by the EPA On-Scene Coordinator (OSC).

### 3.0 QA OBJECTIVES

The general QA objectives for this project are to develop and implement procedures for obtaining and evaluating defensible data which are representative, comparable, and complete, and which can be used to assess site hazards and conditions.

This QASP will be followed during the sampling operation to assure that the OSC can place an appropriate degree of confidence in the data, based on the intended use(s) of the data as stated in this QASP. If for any reason the schedules or procedures outlined in this plan cannot be followed, a "Sample Alteration Checklist" (Appendix B) will be completed for each element changed. The change(s) will be reviewed by the TAT field manager and approved by the OSC.

#### 3.1 Analytical QA Objectives

Sample analyses must meet the QA and quality control (QC) objectives (e.g., methods, detection limits, precision, accuracy, and completeness) for the particular parameters (e.g., volatile organic compounds [VOCs], base/neutral/acid [BNAs], inorganics) and methods specified by the EPA Region X as outlined through agreement between the laboratory and E & E (Appendix C).

Standard Operating Procedures (SOPs) have been developed which detail the procedures for performing all tests at an acceptable level of QC in accordance with adopted EPA procedures and guidelines (EPA 1980, 1983a, 1983b, 1984, 1985a, 1985b, 1985c, 1986b, 1986c, 1986d, 1987a, 1987b, 1987c, 1990c). These documents will be used as guidelines to ensure that the data are comparable, interpretable, and defensible to the degree requested by the EPA OSC, as outlined in this section.

#### 3.2. Levels of Data Quality Objectives

The OSC is responsible for establishing the Data Quality Objectives (DQOs) and designating the extent of analytical and field data QA review employed by the TAT for this sampling effort. Three tiers of DQOs have been established (EPA 1990c), which correspond to respective levels of QA review in the Region 10 TAT program. Each tier requires specific field QC measures (Section 6.2) and laboratory deliverables (see Appendix C) which will allow the TAT chemist to perform the required QA review (Section 6.3).

The three tiers of DQOs, in order of intensity, are:

- o QA 1: for urgent and emergency decisions,
- o QA 2: for decisions which require a level of data confidence attainable through confirmation of a portion (10 percent) of the analytical parameters, and,
- o QA 3: for decisions which require a level of data confidence attainable only through confirmation of all of the critical analytical parameters.

QA 1: The simplest DQO is designated as QA 1, and is appropriate when the situation requires rapid data turnaround. The resultant data are nondefinitive as to identification and quantitation (EPA 1990c, E & E 1990).

QA 2: The intermediate DQO, designated as QA 2, is appropriate when the intended uses of the data can be satisfactorily met with a qualitative and quantitative verification of a proportion of the preliminary findings (10 percent or more of the samples). The results of this confirmed data give an associated confidence to the remaining results (EPA 1990c, E & E 1990).

QA 3: The most extensive DQO, designated QA 3, is appropriate when the intended uses of the data require a definitive chemical characterization of all the contaminants in selected "critical samples," which may be required to withstand extensive litigation. This DQO is intended to give the decision-maker a level of confidence for all analytes in those critical samples (EPA 1990c, E & E 1990).

The OSC has determined that the sampling and analyses performed under this sampling effort will conform to the following use and QA criteria:

	<u>Intended Use of Data</u>	<u>QA Objective</u>
Soil		
Toxicity Characteristic Leachate Procedure (TCLP)	Waste disposal evaluation	QA 3
Drums		
Semivolatiles	Contaminant Identification	QA 3
Volatiles	Contaminant Identification	QA 3
Metals	Contaminant Identification	QA 3.

#### 4.0 METHODOLOGIES

##### 4.1 Schedule of Work

The duration of the sampling effort will depend upon information collected during the initial stages of the on-site activities, but is expected to last no more than 3 days. Final laboratory reports are expected 2 weeks after the last of the samples are submitted for

analysis. The final report is expected to be completed approximately 6 weeks after the last of the sample results are received by E & E. The proposed schedule of work is summarized in Table 1.

TABLE 1  
PROPOSED SCHEDULE OF WORK

Item	10/29	11/05	11/12	11/19	12/03	01/07	01/14
Lab Procurement	--*						
Site Work	-*						
Laboratory Analyses		*-----	-----*				
Data Review				*-----	-----*		
Draft Report		*-----	-----	-----*			
Final Report (1)						*-----*	

\* = Denotes cutoffs of proposed time periods.

(1) = Dependent upon timely receipt of acceptable analytical results.

#### 4.2 Sampling

All samples will be collected, identified, and handled, and all documentation and chain-of-custody procedures will be conducted in accordance with accepted regional EPA removal program guidelines and protocols (E & E 1990, Jowise 1988, EPA 1984, 1985a, 1986b, 1986c). The following appropriate E & E SOPs will be used in this sampling effort:

- o Drum sampling,
- o Soil sampling.

The following equipment will be used to obtain samples during the course of this project:

<u>Matrix</u>	<u>Sampling Equipment</u>	<u>Fabrication</u>	<u>Dedicated</u>
Soil	Spoons/steel bowls	Stainless Steel	Yes
Drum Sampling	Drum thieves	Glass/polyethylene	Yes.

##### 4.2.1 Sampling Rationale

The project sampling rationale is summarized below. Any required documentation to support this rationale is provided in Appendix A.

This sampling plan is designed to determine the constituents of open drums, and the presence and extent of any soil contamination.

#### 4.2.2 Approach

The TAT will collect soil and drum samples as part of this sampling effort. The TAT will arrange for commercial laboratory analyses for VOCs, semivolatiles, and metals.

#### 4.2.3 Sample Homogenization

Due to expected difficult access and personnel mobility at certain sampling locations, soil and drum sample homogenization will be conducted by the commercial laboratory. Blind duplicate samples will be homogenized on site. All duplicate and/or split sample bottles associated with a specific sample location will be filled at the same rate with successive spoonfuls of soil.

It should be noted that time and/or matrix biases are a normal component of these sample duplication techniques.

#### 4.2.4 Volatile Organic Samples

Soil, and sludge VOC samples will be transferred immediately upon collection to the appropriate sample container (120-mL glass vial), filling the vial completely.

Liquid samples will be transferred directly from the collection device (i.e., bailer, trap, faucet) to the appropriate sample container(s) (40-mL glass vial), filling each vial completely, and being careful not to aerate the sample or to leave an air pocket under the bottle cap.

Ten percent of all samples submitted for volatile organic analysis will be submitted with field collocated samples to evaluate variance within the sample matrix (EPA 1985a).

#### 4.2.5 BNA Organic Samples

Subsamples in separate sample containers will be submitted for each organic analysis requested (i.e., BNA organics). Soil and sludge samples will be transferred to the appropriate sample container (8-oz glass jars), filling each jar 3/4 full.

Liquid samples will be transferred directly from the collection device (i.e., thieving tube) to the appropriate sample container(s) (1-L amber glass bottle), filling each bottle 3/4 full.

Ten percent of all samples submitted for organics analyses will be submitted with field replicate samples to evaluate sampling variances and combined field and analytical precision (EPA 1985a).

#### 4.2.6 Inorganic Samples

Subsamples in separate sample containers will be submitted for each inorganic analysis requested (e.g., metals, TCLP). Soil and sediment samples will be transferred to the appropriate sample container (8-oz glass jars), filling each jar 3/4 full.

Liquid samples will be transferred directly from the collection device (i.e., bailer, drum thief) to the appropriate sample container(s) (1-L polyethylene bottle), filling each bottle 3/4 full.

Ten percent of all samples submitted for inorganics analyses will be submitted with field replicate samples to evaluate sampling variances and combined field and analytical precision (EPA 1985a).

#### 4.3 Sample Types and Quantities

It is estimated that 14 samples (including QA/QC samples) will be collected at 10 locations as part of this sampling program. The numbers and types of samples are summarized in Table 2.

#### 4.4 Investigation-Derived Debris

All disposable wastes (e.g., paper, plastic and stainless steel spoons) will be double-bagged and left on-site until the analytical results are received and interpreted (estimated timespan less than 30 days). Following that chemical determination, all materials will be disposed of in an EPA-approved manner. Nonhazardous materials will be disposed of according to local solid waste disposal regulations (e.g., landfill, on-site dumpster). The selected disposal method for materials deemed to be hazardous will be determined based on the analytical results.

Decontamination solutions and materials will be disposed of according to local septic waste disposal regulations (e.g., municipal sewer, on-site drainfield) (EPA 1990).

### 5.0 PROJECT ORGANIZATION AND RESPONSIBILITIES

The OSC has the ultimate responsibility for decisions concerning project sampling needs, objectives, and schedules. The E & E TAT Leader has the responsibility for the execution of the overall TAT program.

The TAT Project Manager is the primary contact point with the OSC and has the responsibility for the execution of decisions and courses of action deemed appropriate by the OSC, including the development of this QASP, project team organization, task supervision, and report and deliverable preparation. The Project Manager is also responsible for ensuring adherence to the QASP throughout the sampling effort, and recording any deviations from the plan.

TABLE 2

## FIELD SAMPLING SUMMARY

Matrix*	Analytical Parameter	(1)	Container type and sample volume	Preservative	Holding Time	Q C S a m p l e s				TOTAL SAMPLES		
		Level of Sensvtvty	(# of containers req'd)			B l a n k s <sup>2</sup>	Field <sup>3</sup>	QC +s <sup>4</sup>	MS/MSD <sup>5</sup>	Field	QA	Final
DS DL	Metals	Varies	7 8-oz. glass jars 7 Poly bottles (1 L)	No	6 months				1	5	2	7
DS DL	Volatiles	2-5 ppb	7 VOA vials 120 mL	No	14 days			NA	1	5	2	7
DS DL	Semi-volatiles		7 8-oz glass jars	No	14 days			NA	1	5	2	7
S	TCLP	Varies	8-oz glass jars	No				NA	1	5	2	7

\* = Matrix: S = soil; W = water; O = oil; DS = drummed solids; DL = drummed liquids; TS = tank solids; TL = tank liquids;  
A = air; X = other

1 = Level of Sensitivity: The concentration, specific or generic, that is needed to make an evaluation (used to determine analytical method).

2 = Only required if dedicated sampling tools are not used (otherwise specify NA).

3 = Trip blank: One blank (consisting of 2 40-mL vials of distilled/deionized water) per cooler containing VOCs (otherwise specify NA). Transport blank: One blank (consisting of a full sample volume) of deionized water at a rate of 1 per sampling day.

4 = Performance check samples (optional for QA 2, mandatory for QA 3) if available (otherwise specify NA).

5 = Matrix Spike/Matrix Spike Duplicate: at a rate of 1 per 10 samples for QA 2 and 1 per 5 samples for QA 3.

QC = quality control.

QA = quality assurance.

VOA = volatile organic analysis.

TCLP = Toxicity Characteristic Leachate Procedure.

The E & E Corporate QA Assurance Group is responsible for auditing and reviewing the field activities and final deliverables, and proposing corrective action, if necessary, for nonconformity to the QA/QC Plan (Site Safety Plan and QAPjP) and Health and Safety Plan.

The following is a list of the key personnel and their responsibilities:

EPA OSC: Carl Kitiz, EPA, Seattle  
TAT Leader: William L. Carberry, E & E, Seattle  
TAT Project Manager: David Schuchardt, E & E, Seattle  
Data Quality Review: Michael Bray, E & E, Seattle  
System Performance: E & E Quality Assurance Group, Buffalo, NY

Analytical support for this sampling project will consist of or be supplied by a commercial laboratory. A commercial laboratory will be selected by competitive bid prior to the initiation of field activity for the analysis of soil and drum samples. The analytical requirements will be summarized on the laboratory services bid specification sheet included in Appendix A.

The TAT manager will notify the laboratory of the confirmed days on which sampling is to occur and, consequently, when samples will be shipped/delivered. The TAT manager will confirm the sample documentation numbers, the number of samples to be shipped, and the type(s) of analyses required. The TAT manager will verify sample arrival at the analytical station.

## 6.0 QA/QA REQUIREMENTS

### 6.1 Analytical Parameters

The types of analyses required for the satisfactory completion of this project have been determined by the OSC. Analytical parameters are summarized along with the sample types and quantities in Table 3. Analytical requirements, including any special data delivery time requirements, have been summarized on the laboratory bid specification form (Appendix A).

### 6.2 QC Measures

QC checks for sample collection will be accomplished by a combination of the following procedures (E & E 1990):

- o Field collocated and replicate samples,
- o Chain-of-custody protocols, and
- o Laboratory QA.

TABLE 3  
QA/QC ANALYSIS AND OBJECTIVE SUMMARY

Matrix *	Analytical Parameter	Analytical Method	S p i k e s		QA/QC	
			Matrix <sup>1</sup>	Surrogate <sup>2</sup>	Detect Limits <sup>3</sup>	DQO <sup>4</sup>
DS	Metals	6010 **	1	NA	Varies	3
DS	Volatiles	8240 **	1	1	2-5 ppb	3
DL	Metals	6010 **	1	NA	varies	3
DL	Volatiles	8240 **	1	1	2-5 ppb	3
DS	Semi-volatiles	8270 **	1	NA	varies	3
DL	Semi-volatiles	8270 **	1	NA	varies	3
S	TCLP	1311 <sup>+</sup>	1	NA		3

\* = Matrix: S = soil; W = water; O = oil; DS = drummed solids; DL = drummed liquids; TS = tank solids; TL = tank liquids; A = air; X = other

\*\*= EPA 1986c.

1 = Matrix Spike/Matrix Spike Duplicate: at a rate of 1 per 10 samples for QA 2 and 1 per 5 samples for QA 3.

2 = 1 for each sample for QA 2 and QA 3 (otherwise specify NA).

3 = To be determined at the time that laboratory selection is made.

4 = Data Quality Objective for analysis (enter QA 1, QA 2, or QA 3).

+ = Federal Register, Volume 55, Number 61, March 29, 1990, Appendix II.

QA/QC = quality assurance/quality control.

DQO = data quality objectives.

### 6.3 Data QA Review

Field QA samples (e.g., background, collocated, and replicate [E & E 1990], and blanks and QC positives [Table 2]) will be collected as required and/or indicated, and submitted blindly to the laboratory. The laboratory will provide, in a timely manner, analytical data sheets for all submitted samples.

The QA review of data packages for all three tiers of DQOs will include an evaluation of the following: the information provided on the analytical data sheets and required support documentation for all sample analyses (Appendix C); the supporting sample collection documentation, including chain of custody; and field instrument calibration and/or performance check documentation. The QA review will also examine adherence to the procedures as described in the cited SOPs and the requested analytical methods.

Holding times will be assessed when appropriate for the analytical method to ascertain the validity of results based on the time of collection to the time of extraction or analysis. Holding time criteria will be as specified in analytical method performed (Table 2 and Appendix A).

Additional data validation procedures will be followed as required (EPA 1990c) for each sample and analysis based on the DQO specified by the OSC. An overall assessment of the data will be made based on the data review.

When a QA 3 DQO has been specified by the OSC, the laboratory will meet all requirements specified for the CLP (EPA 1986d, 1987a, 1987b, 1987c). The laboratory will provide all the deliverables required for analyses under the CLP (EPA 1986b, 1986d, 1987a, 1987b, 1987c).

The QA review of the data package will be conducted in accordance with EPA guidelines (EPA 1985c).

### 6.4 Precision, Accuracy, and Completeness

To provide defensible data, all measurements and analytical results must have an appropriate degree of accuracy, reproducibility, and a level of completeness to assure that the samples collected and the analytical results obtained are appropriately representative of actual field conditions.

The laboratory will prepare and analyze the samples necessary to calculate accuracy and precision for all QA 2 and QA 3 DQO sampling activities. These analyses include matrix spikes and matrix spike duplicates (for organic analyses) or a duplicate and matrix spike (for inorganic analyses) at a minimum rate of 10 percent (for QA 2) or 20 percent (for QA 3) of the total number of samples for each analytical parameter. Surrogate spikes will also be prepared and analyzed for each organic sample. The laboratory will also prepare and analyze method blanks at a rate of one per day, or one per batch of twenty samples, whichever is more frequent.

Analytical precision will be evaluated by comparing the relative percent differences between the above-mentioned duplicate analyses for organic and inorganic parameters. Accuracy will be measured by the percent recovery in the matrix spike, comparing the true (spiked) value with the reported (recovered) value.

Analytically complete data will be that which meet the QA criteria for the specified DQO (Section 6.3), as determined through an E & E review of the data package. An E & E chemist will evaluate the acceptability of the data and will categorize all or parts of the package as acceptable, acceptable when presented with qualifications, or not acceptable (rejected).

Acceptable levels for precision and accuracy will be as prescribed by the selected EPA-approved method (EPA 1983a, 1983b, 1986c, 1986d, 1987a, 1987b, 1987c) indicated on the laboratory bid specification sheet (Appendix A). The minimum acceptable level for data completeness (i.e., the data are judged as acceptable outright, or with qualification) will be 80 percent.

## **7.0 DELIVERABLES**

Upon completion of the review, the senior chemist will be responsible for developing a QA report for each analytical package. The memorandum summarizing the findings during the data QA review will be attached to the final project report and will not typically be delivered as a final product in itself.

All data and the respective QA reports generated from the project sampling tasks and used in the final reports will be appropriately identified within the final project report. Where the analytical data have been reduced, the method of reduction will be described in the final report.

No separate report to describe the performance of data measurement systems or data quality is anticipated. The final report will contain a separate QA memorandum appendix from the E & E review staff that will summarize data quality information collected during the project. Sample data will be summarized in tables by E & E. The data summaries will be attached to all reports when applicable to the context of the report.

## **8.0 DATA VALIDATION**

Validation of all analytical data will be performed by chemists at E & E, or at the Region X EPA Laboratory pursuant to the DQO specified in this document (Sections 3.0 and 6.0). Laboratories will be required to submit results which are supported by the back-up data and QA/QC results specified on the laboratory services bid specification sheet (Appendix A) to enable the reviewer to determine the quality of the data. Laboratories will retain that documentation as necessary under agreement with E & E (Appendix C).

Data will be evaluated according to the appropriate criteria contained in the Removal Program Data Validation Procedures (EPA 1990c) and per the TAT QAPjP (E & E 1990) for the specified DQO.

## 9.0 BIBLIOGRAPHY

Ecology and Environment, Inc. (E & E), October 31, 1990, Region 10 Technical Assistance Team Quality Assurance Project Plan, TDD No. T10-9010-001, Superfund Response and Investigations Section, U.S. Environmental Protection Agency, Seattle, WA.

International Air Transport Association (IATA), 1987, Dangerous Goods Regulations, 29th Edition.

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\_\_\_\_\_, July 1985b, Guidelines Establishing Testing Procedures for the Analysis of Pollutants, 40 CFR 136.

\_\_\_\_\_, 1985c, Laboratory Data Validation Functional Guidelines, (R-582-5-5-01).

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\_\_\_\_\_, 1986c, Test Methods for Evaluating Solid Waste (SW-846), Office of Solid Waste and Emergency Response, Washington, D.C.

\_\_\_\_\_, 1986d, Statement of Work for Dioxin Analysis, (IFB WA86-K357).

\_\_\_\_\_, 1987a, Statement of Work for Organic Analyses, (IFB WA87-K236, IFB WA87-K237, IFB WA87-K238).

\_\_\_\_\_, 1987b, Statement of Work for Inorganic Analyses, (IFB WA87-K025, IFB WA87-K026, IFB WA-87-K02).

\_\_\_\_\_, March 1987c, Statement of Work for PCDD/PCDF Analysis.

\_\_\_\_\_, January 31, 1990a, Issuance of the Interim Guidance for the Disposal of Investigation-derived Wastes by EPA Region 10 Inspectors, Memorandum from Robie G. Russel, Regional Administrator to Division Directors, Operation Office Directors.

\_\_\_\_\_, 1990b, Technical Assistance Team (TAT) Contract for Emergency Response, Removal and Prevention (Zone II), Contract No. 68-WO-0037, Superfund Branch, Washington, DC.

\_\_\_\_\_, May 24, 1990c, Interim Final Guidance for the Quality Assurance/Quality Control Interim Guidance for Removal Activities, OSWER Directive 9360.4-01, US EPA Office of Emergency and Remedial Response, Washington, DC.

APPENDIX A  
SUPPLEMENTAL INFORMATION

## BID ANALYSIS

VENDOR (1).....

ADDRESS. ....

TELEPHONE NUMBER.....CONTACT PERSON.....

**VENDOR (2)...**

ADDRESS.....

TELEPHONE NUMBER.....CONTACT PERSON.....

**VENDOR** (3,.....).....

ADDRESS...

TELEPHONE NUMBER. . . . . CONTACT PERSON, J. . . . .

**COST BREAKDOWN OF WORK TO BE PERFORMED:**

## UNIT COST PER VENDOR

	(1)	(2)	(3)
5 liquid drum samples for			
DD Metals			
WHA + 10 TICS (GC/MS)			
BNA + 10 TICS (GC/MS)			
5 Soil Samples for full TCLP			
CLD-style deliverable package			
10% H.S./HSD			
2 week Turnaround			
<b>TOTAL \$</b>			

### Reasonableness of Bids:

CAS chepest

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SMALL BUSINESS: YES/NO IF YES, ID#

SMALL DISADVANTAGED BUSINESS: YES/NO IF YES, ID#

Woman Owned ☒ Yes ☐ NO If Yes, \_\_\_\_\_

APPENDIX B  
SUPPLEMENTAL FORMS

SAMPLE ALTERATION CHECKLIST

Project Name and Number:

Material to be sampled:

Measurement Parameter:

Standard Procedure for Field collection & Library Analysis (cite references):

Reason for change in Field Procedure or Analytical Variation:

Variation from field or Analytical Procedure:

Special Equipment, Materials, or Personnel Required:

Initiator \_\_\_\_\_ Date \_\_\_\_\_

EPA OSC \_\_\_\_\_ Date \_\_\_\_\_

ADDENDUM FOR MULTI-PHASED PROJECTS

Proposed Project Name with Appropriate TDD, Project and Account #s:

Original Project Name with Appropriate TDD, Project, and Account #s:

Proposed Project Objective(s):

Effective Field Dates for Original Project:

Proposed field dates for this project:

Proposed TAT Sample Numbers from: T \_\_\_\_\_ to: T \_\_\_\_\_

Laboratory Designation:      ☐ Field screening      ☐ FIT  
                                 ☐ EPA Region X laboratory      ☐ CLP  
                                 ☐ Commercial laboratory      ☐ \_\_\_\_\_

PROPOSED SCHEDULE OF WORK

<u>Activity</u>	<u>/</u>	<u>/</u>	<u>/</u>	<u>/</u>	<u>/</u>	<u>/</u>
1.						
2.						
3.						
4.						
5. Draft Report						
6. Final Report (1)						

\* = Denotes cutoffs of proposed time periods.

(1) = Dependent upon timely receipt of acceptable analytical results.

# SAMPLE SUMMARY

<u># of</u> <u>Samples</u>	<u>Parameter</u>	<u># of QA</u> <u>Samples</u>	<u>Matrix</u>	<u>Container</u>	<u>Holding</u> <u>Time</u>	<u>Preservation</u>
-------------------------------	------------------	----------------------------------	---------------	------------------	-------------------------------	---------------------

# ANALYTICAL SUMMARY

<u>Parameter</u>	<u>Method</u>	<u>Ref</u>	<u>Detection</u> <u>Limits</u>
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## Key Project Personnel:

Initial & Date

EPA OSC: \_\_\_\_\_, EPA, Seattle \_\_\_\_\_  
TAT Leader: William L. Carberry, E & E, Seattle \_\_\_\_\_  
TAT Project Manager: \_\_\_\_\_, E & E, Seattle \_\_\_\_\_  
Data Quality Review: Michael Bray, E & E, Seattle \_\_\_\_\_  
System Performance Audit: E & E Quality Assurance Group

CORRECTIVE ACTION CHECKLIST

Project Name and Number:

Sample Dates Involved:

Measurement Parameter(s):

Acceptable Data Range:

Problem Areas Requiring Corrective Action:

Measures Required to Correct Problems:

Means of Detecting Problems and Verifying Correction:

Initiator \_\_\_\_\_ Date \_\_\_\_\_

EPA OSC \_\_\_\_\_ Date \_\_\_\_\_

TATL \_\_\_\_\_ Date \_\_\_\_\_

APPENDIX C

EXAMPLE: LETTER OF AGREEMENT  
FOR  
LABORATORY QA/QC PROCEDURES

Dear Sirs:

This letter is to inform you of recent modifications in the Ecology & Environment, Inc. (E&E) Technical Assistance Team (TAT) quality assurance requirements for analytical services provided by your laboratory.

Modifications include the designation of specific analytical methods, defined levels of QA/QC and required deliverables to accompany all results reported to E&E. The approved analytical methods are listed in Tables 1, 2 and 3 as an attachment to this letter. The descriptions of the QA/QC and deliverables requirements are below.

Quality assurance requirements and data package deliverables will be on a three tier system. During the bidding process for each job, an E&E chemist will indicate the quality assurance category of the project. These categories and their corresponding data package requirements are as follows:

**LEVEL I: TIME-CRITICAL EMERGENCY ACTION**

**Quality Assurance:**

- o EPA-approved methods must be followed (see attached Tables), unless otherwise specified during the bidding process.
- o Prior to sample analysis a minimum of a three point initial calibration curve (two standards at concentrations bracketing the expected analyte concentration and a blank) must be performed to demonstrate linearity on each instrument. A one point, mid-range, calibration check must be performed daily to ensure linearity.
- o A method blank must be analyzed for each batch (maximum of 20 samples) or daily, whichever is more frequent, on each instrument.

- o Duplicate (re-extracted) and matrix spiked samples must be run at an equivalent of at least 5% of the sample load.

**Deliverables:**

- o A statement of analytical and sample preparation methods used, including information regarding types of columns, wavelenghts, solvents, etc. used.
- o A statement of sample holding times, i.e. extraction and analysis dates.
- o Analytical data sheets for all field samples, spikes, duplicates and blanks.

All raw data generated during analysis must be kept on file at the laboratory for at least one (1) year, allowing E&E to purchase the additional data at a later date if necessary.

**LEVEL II: EVALUATION/SCREENING ACTION**

Non-CLP style analyses:

**Quality Assurance:**

The quality assurance requirements established for Level I analyses above plus the following requirements:

- o Prior to sample analysis a minimum of a five point initial calibration curve (four standards at varying concentrations and a blank) must be performed to demonstrate linearity on each instrument.
- o For organics analyses an appropriate surrogate compound must be spiked into each sample, blank, standard or QA sample prior to purging or extraction.
- o A second, dissimilar, chromatographic column must be used to confirm the identification of analytes except when a mass spectrometer is used as the detector.
- o The following analytical sequence must be followed:
  1. calibration
  2. blank
  3. five samples
  4. a standard
  5. five samples
  6. a standard
  7. five samples
  8. a standard
  9. five samples
  10. a standardrepeat starting from a blank (step 2).

**Deliverables:**

All of the deliverables required in Level I plus the following requirements:

- o Information on the initial and continuing calibration. i.e. response factors, percent relative standard deviation of response factors and percent difference calculations.
- o Surrogate percent recovery calculations.
- o Copies of instrument hard copy pertaining to samples, blanks, standards and calibrations.
- o A statement of weights, volumes, dillutions, etc., used in the analysis.

**CLP Style Analyses:**

**Quality Assurance:**

QA consistent with USEPA Contract Laboratory Program requirements in effect at the time the project is bid by E&E.

**Deliverables:**

**Organics:**

- o Analysis data sheets, including tentatively identified compounds (CLP form I);
- o Surrogate recovery sheets (CLP form II);
- o Matrix spike/matrix spike duplicate recovery sheets (CLP form III);
- o Blank summary sheets (CLP form IV);
- o GC/MS tuning and mass calibration sheets (CLP form V);
- o Initial calibration data sheets (CLP form VI);
- o Continuing calibration check sheets (CLP form VII).

**Pesticides/PCBs:**

- o Analysis data sheets (CLP form I);
- o Surrogate recovery sheets (CLP form II);
- o Matrix spike/matrix spike duplicate recovery sheets (CLP form III);
- o Blank summary sheets (CLP form IV);
- o Evaluation standards summary sheets (CLP form VIII);
- o Standards summary sheet (CLP form IX);
- o Pesticide/PCB identification sheet (CLP form X).

**Inorganics:**

- o Analysis data sheets (CLP form I);
- o Initial and continuing calibration verification sheet (CLP form I part 1);
- o Blank information sheet (CLP form III);
- o Spike sample recovery sheets (CLP form V);
- o Duplicate information sheets (CLP form VI).

Information used to create a complete Contract Lab Program deliverable data package must be kept on file at the laboratory for at least one (1) year, allowing E&E to purchase a full data package at a later date if necessary.

**LEVEL III: DEFINITIVE CHEMICAL CHARACTERIZATION**

Quality Assurance and deliverable requirements are the same as the US EPA Contract Lab Program requirements in effect at the time the project is bid by E&E.

All dioxin and PCDD/PCDF analyses will be a Level III analysis unless otherwise specified at the time of the bid.

**ADDITIONAL REQUIREMENTS FOR ALL LEVELS**

The laboratory will retain unused sample volume and used sample containers for the period of 60 days after data submission. Organic extracts will be stored in vials/bottles with teflon-lined septa at 4°C (+2°C) for 365 days after data submission. Disposal of samples and sample extracts must be in compliance with local, state and federal regulations and will be the responsibility of the laboratory. Please include disposal cost in the bid price.

Turnaround times are extremely important to E&E in the function that we perform for the EPA. We understand that, occasionally, delays are unavoidable. But repeated deviation from agreed to turnaround times will result in E&E's re-evaluation of the acceptability of the laboratory for the TAT's analytical needs.

E&E is periodically tasked to arrange for analytical services which are billed through a third party. Payment may also be made through an E&E purchase order. E&E will receive all bids and inform the laboratory of the billing arrangements on a job-by-job basis at the time of laboratory selection. In those instances when the analyses are billed to a third party, the laboratory will deliver a full set of all required documentation to the billed party as well as to E&E.

All analytical results, official communications and invoicing when appropriate, will be directed to:

Michael Bray  
c/o Ecology and Environment, Inc.  
101 Yesler Way, Suite 600  
Seattle, WA 98104

I hope this letter will clarify the modified requirements for analytical services performed for E&E. If there are any questions please feel free to call me at (206) 624-9537.

Sincerely,

Michael G. Bray  
TAT Chemist

MGB/thl

Enclosure

Table 1 List of EPA Approved Inorganic Test Procedures<sup>4</sup>

Parameter and Method		EPA 1979 <sup>1</sup>	Reference	
			Std Methods <sup>2</sup>	SW-846 <sup>3</sup>
ICP Metals		200.7		6010
Aluminum	AA flame	202.1	303C	7020
	AA furnace	202.2	304	
Antimony	AA flame	204.1	303A	7040
	AA furnace	204.2	304	7041
Arsenic	AA furnace	206.2	304	7060
	AA gaseous hydride	206.3	303E	7061
Barium	AA flame	208.1	303C	7080
	AA furnace	208.2	304	
Beryllium	AA flame	210.1	303C	7090
	AA furnace	210.2	304	7091
Boron	colorimetric	212.3	404A	
Cadmium	AA flame	213.1	303A,B	7130
	AA furnace	213.2	304	7131
Calcium	AA flame	215.1	303A	7140
VI Chrome	AA chelation-extraction	218.4	303B	7197
	colorimetric (diphenylcarbazide)			7196
	coprecipitation			7195
	differential pulse polarography			7198
Chromium	AA flame	218.1	303A	7190
	AA chelation-extraction	218.3	303B	
	AA furnace	218.2	304	
Cobalt	AA flame	219.1	303A,B	7200
	AA furnace	219.2	304	7201
Copper	AA flame	220.1	303A,B	7210
	AA furnace	220.2	304	
Cyanide, total	titration		412C	
	spectrophotometric, manual	335.2	412D	
	automated	335.3		
Cyanide, amenable	titrametric or spectrophotometric	335.1	412F	
Cyanide, total and amenable	colorimetric, manual			9010
	automated			9012
Gold	AA flame	231.1	303A	
	AA furnace	231.2	304	
Iron	AA flame	236.1	303A,B	7380
	AA furnace	236.6	304	
Lead	AA flame	239.1	303A,B	7420
	AA furnace	239.2	304	7421
Magnesium	AA flame	242.1	303A	7450
Manganese	AA flame	243.1	303A,B	7460
	AA furnace	243.2	304	
Mercury	cold vapor, manual	245.1	303F	7470
	automated	245.2		7471
Molybdenum	AA flame	246.1	303C	7480
	AA furnace	246.2	304	7481
Nickel	AA flame	249.1	303A,B	7520
	AA furnace	249.2	304	
Osmium	AA flame	252.1	303C	7550
	AA furnace	252.2	304	
Selenium	AA furnace	270.2	304	7740
	AA gaseous hydride	270.3	303E	7741
Silica	colorimetric	370.1		
Silver	AA flame	272.1	303A,B	7760
	AA furnace	272.2	304	
Sodium	AA flame	273.1	303A	7770
Thallium	AA flame	279.1	303A	7840
	AA furnace	279.2	304	7841
Tin	AA flame	282.1	303A	7870
	AA furnace	282.2	304	

Table 1 (cont.)

<u>Parameter and Method</u>		<u>Reference</u>		
		<u>EPA 1979<sup>1</sup></u>	<u>Std Methods<sup>2</sup></u>	<u>SW-846<sup>3</sup></u>
Vanadium	AA flame	286.1	303C	7910
	AA furnace	286.2	304	7911
Zinc	AA flame	289.1	303A,B	7950
	AA furnace	289.2	304	

1. EPA. Methods for Chemical Analysis of Water and Waste. EPA-600/4-79-020. March, 1983.
2. APHA, AWWA, WPCF. Standard Methods for the Examination of Water and Wastewater. 16th Edition. 1985.
3. EPA. Test Methods for Evaluating Solid Wastes. 3rd Edition. SW-846. November, 1986.
4. Lists of additional EPA approved methods are available in 40 CFR. Part 136.3.

Table 2 List of EPA Approved Organic Test Procedures<sup>6</sup>

Compound Class <sup>1</sup>	CFR40 <sup>2</sup>	SW-846 <sup>3</sup>	Other
Purgeable Halocarbons	601	8010	
Purgeable Non-halogenated Volatile Organics		8015	
Purgeable Aromatics	602	8020	
Acrolein and Acrylonitrile	603	8030	
Phenols	604	8040	
Benzidenes	605		
Phthalate Esters	606	8060	
Nitrosamines	607		
Organochlorine Pesticides & PCBs	608	8080	617 <sup>4</sup> , CLP <sup>5</sup>
Nitroaromatics and Cyclic Ketones	609	8090	
Polynuclear Aromatic Hydrocarbons	610	8100, 8310	
Haloethers	6117		
Chlorinated Hydrocarbons	612	8120	
Organophosphate Pesticides		8140	614 <sup>4</sup> , 622 <sup>4</sup>
Chlorinated Herbicides			615 <sup>4</sup>
Triazine Pesticides			619 <sup>4</sup>
Dinitroaniline Pesticides			627 <sup>4</sup>
Cyanazine Pesticides			629 <sup>4</sup>
Dithiocarbamate Pesticides			630 <sup>4</sup>
Benomyl and Carbendazim Pesticides			631 <sup>4</sup>
Carbamates and Urea Pesticides			632 <sup>4</sup>
Organonitrogen Pesticides			633 <sup>4</sup>
Volatile Organics	624	8240	CLP <sup>5</sup>
Semivolatile Organics	625	8250, 8270	CLP <sup>5</sup>
2,3,7,8-Tetrachlorodibenzo-p-dioxin	613		CLP <sup>5</sup>
Polychlorinated Dibenzo-p-dioxins and Polychlorinated Dibenzofurans		8280	

1 - Analytes per compound class are not the same for all methods. See specific method for analytes examined.

2 - 40CFR 136 Appendix A.

3 - EPA. Test Methods for Evaluating Solid Waste, 3rd Edition. SW-846. November, 1986.

4 - EPA. Test Methods for Nonconventional Pesticides Chemicals Analysis of Industrial and Municipal Wastewater. EPA-440/1-83-079C.

5 - Contract Laboratory Program. Statement of Work in effect at time of bid

6 - Lists of additional EPA approved methods may be found in 40 CFR 136.3.

Table 3 List of EPA Approved Miscellaneous Test Procedures<sup>4</sup>

Parameter and Method		EPA 1971 <sup>1</sup>	Reference	
			Std Methods <sup>2</sup>	SW-846 <sup>3</sup>
Acidity, as CaCO <sub>3</sub>		305.1	402(4a)	
Alkalinity, as CaCO <sub>3</sub>		310.1	403	
Ammonia (as N)	Nesslerization	350.2	417B	
	titration	350.2	417D	
	electrode	350.3	417E,F	
	automated phenate	350.1	417G	
Biochemical Oxygen Demand		405.1	507	
Bromide	titrimetric	320.1		
Fluoride	electrode	340.2	413B	
	colorometric	340.1	413C	
	automated complexone	340.3	413E	
Hardness	automated colorometric	130.1		
	titrimetric	130.2	314B	
pH	electrometric	150.1	423	9040
	pH paper			9041
	soil pH			9045
Kjeldahl nitrogen (as N)	titration	351.3	417D	
	Nesslerization	351.3	417B	
	electrode	351.3	417E,F	
	automated phenate	351.1		
	semi-automated block digester	351.2		
	potentiometric	351.4		
Nitrate (as N)	colorometric	352.1		9200
Nitrate-nitrite (as N) Cd reduction	manual	353.3	418C	
	automated	353.2	418F	
	automated hydrazine	353.1		
Nitrite (as N)	spectrophotometric	354.1	419	
Oil and grease	gravimetric	413.1	503A	9070
	extraction for sludge			9071
Total Organic Carbon				
Orthophosphate ascorbic acid method	combustion or oxidation	415.1	505	9060
	automated	365.1	424G	
	manual single reagent	365.2	424F	
	manual two reagent	365.3		
Oxygen, dissolved	winkler method	360.2	421B	
	electrode	360.1	421F	
Phenols	colorometric (4AAP)			
	manual	420.1		
	automated	420.2		9066
	spectrophotometric			
	manual (4AAP)			9065
Turbidity	MSTH			9067
	nephelometric	180.1	214A	

1. EPA. Methods for Chemical Analysis of Water and Waste. EPA-600/4-79-020. March, 1983.

2. APHA, AWWA, WPCF. Standard Methods for the Examination of Water and Wastewater, 16th Edition. 1985.

3. EPA. Test Methods for Evaluating Solid Waste, 3rd Edition. SW-846. November, 1986

4. Lists of additional EPA approved methods are available in 40 CFR 136.3.

SSP/PLT2

**SITE SAFETY PLAN**  
(for use by E & E personnel only)

**A. GENERAL INFORMATION**

Project Name: > AUBURN INK SITE

TDD No.: > T10-9010-049

Project Manager: > DAVID SCHUCHARDT

Per No.: > EWA-0655 SAA

Site Location: > AUBURN, WA

Prepared by: > DAVID SCHUCHARDT

Date Prepared: > 10-29-90

Approval by: > *Jon Byler*

Date Approved: > ~~10-29-90~~ 11/1/90

Site Safety Officer Review: > *[Signature]*

Date Reviewed: > 11-1-90

Scope/Objective of Work: > CONDUCT SITE ASSESSMENT AT THREE LOCATIONS ON SITE TO SAMPLE CONTENTS OF DRUMS STORED ON SITE. COLLECT SOIL SAMPLES IF NECESSARY

Proposed Dates of Field Activities: > 11-1-90

Background Info: > Preliminary (no analytical data available)

Hazard Summary: > Site may contain drums filled with inks and glues.

Overall Chemical Hazard: > Moderate

Overall Physical Hazard: > Moderate

**B. SITE/WASTE CHARACTERISTICS**

Waste Type(s): > liquid / solid

Chemical Hazards: > Flammable/Ignitable, volatile, acutely toxic

Physical Hazards: > Trip/Fall

Site History/Description and Unusual Features: > Site is an abandoned warehouse at which drums  
of inks and glues have been stored.

Locations of Chemicals/Wastes: > DRUMS ARE LOCATED OUTSIDE THE WAREHOUSE

Estimated Volume of Chemicals/Wastes: > UP TO 10, 55-GAL. DRUMS.

Site Currently in Operation: > NO

### C. HAZARD EVALUATION

#### List of Tasks:

Task 1: > DRUM SAMPLING

Task 2: > SOIL SAMPLING

Task 3: >

Task 4: >

Task 5: >

Task 6: >

#### Physical Hazard Evaluation:

Task 1: > TRIP/FALL

Task 2: > TRIP/FALL

Task 3: >

Task 4: >

Task 5: >

Task 6: >

#### Summary of Chemical Hazard Evaluation:

<u>Compound</u>	<u>PEL/TWA</u>	<u>Route of Exposure</u>	<u>Acute Symptoms</u>	<u>Odor Threshold</u>	<u>Odor Description</u>
> TOLUENE	> 100/200 ppm	> EYE, DERMAL, INHALE	> FATIGUE, CONFUSION	> 1.20 ppm	> SOUR, PUNGENT
> XYLENES	> 100/100 ppm	> EYE, DERMAL > INHALATION	> DIZZINESS, HEAD- > ACHE, NAUSEA	> 26.0 ppm	> SWEET
>	>	>	>	>	>
>	>	>	>	>	>
>	>	>	>	>	>
>	>	>	>	>	>
>	>	>	>	>	>
>	>	>	>	>	>
>	>	>	>	>	>

Note: A Hazard Evaluation Sheet for each major known contaminant is attached.

# D. SITE SAFETY WORK PLAN

## Control:

Perimeter identified: > YES

Site secured: > NO

Work Areas Designated: > YES

Zone(s) of Contamination Identified: > YES

Personnel Protection (TLD badges required for all field personnel):

Anticipated Level of Protection (cross-reference task numbers to Section C):

	<u>Level of Protection</u>			
	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>
Task 1	>	⊗	>	>
Task 2	>	>	⊗	>
Task 3	>	>	>	>
Task 4	>	>	>	>
Task 5	>	>	>	>
Task 6	>	>	>	>

Modifications: > TASK 1 AND TASK 2 ACTIVITIES WILL BE SUPPORTED BY OUR MONITORING AND UPGRADES WILL PROGRESS AS STATED BELOW

## Action Levels for Work Zone:

Organic Vapors: > 1ppm above background - use Level C  
> 5ppm above background - use Level B

Oxygen: < 19.5% - use Level B  
> 25% - exit site

Combustible Gases: > 10% LEL - continuous monitoring  
> 25% LEL - exit site

Dust: > 0.5 mg/m3 - use Level C

Radiation: > 0.1mR/hr - continuous monitoring  
> 2mR/hr - exit site and conduct stay-time calculations

## Air Monitoring (daily calibration unless otherwise noted):

<u>Contaminant of Interest</u>	<u>Type of Sample</u> (area, personal)	<u>Monitoring Equipment</u>	<u>Frequency of Sampling</u>
> ORGANIC VAPOURS	> AREA	> OVA	> CONTINUOUS
>	>	>	>
>	>	>	>
>	>	>	>
>	>	>	>
>	>	>	>

Decontamination Solutions and Procedures for Equipment, Sampling Gear, etc.: Where possible, disposable sampling equipment will be used. When necessary, the decontamination procedure will include a consecutive series of the following washes:

ALCONOX AND WATER;

DIW RINSE;

AIR DRY,

Two TUBS WILL BE SET UP IN A DECON LINE. THE FIRST TUB WILL HAVE AKNOWX AND WATER, THE SECOND TUB WILL HAVE A WATER RINSE. PROTECTIVE CLOTHING WILL BE REMOVED AND SEALED IN BODY BAGS.

Solution Monitoring Procedures: > DECON SOLUTIONS WILL BE POURED OUT ON-SITE INTO AREAS SUSPECTED OF PREVIOUS CONTAMINATION.

Local Site Equipment, Facilities, or Procedures: >

Entry Procedures and Special Considerations: >

Limitations: > WORK WILL OCCUR FROM 8 AM TO 5 PM TO UTILIZE DAYLIGHT WEATHER SUCH AS HEAVY RAIN MAY POSTPONE SAMPLING ACTIVITIES

Local Spill Control: > SORBENT PADS WILL BE BROUGHT TO CONTAIN SPILLS

Investigation-Derived Material Disposal: > ALL DISPOSABLE CLOTHING AND SAMPLING EQUIPMENT WILL BE STORED IN BODY BAGS, AND DISPOSED OF ACCORDING TO MUNICIPAL SOLID WASTE

Waste Handling Procedures Including Protective Wear: >

<u>Team Member</u>	<u>Responsibility</u>
DAVE SCHUCHARDT	Team Leader
DAVE BYERS	Site Safety Coordinator
PA CHUN	> TEAM MEMBER
	>
	>
	>
	>
	>

(Use supplemental sheets, if necessary)

(Obtain a local telephone book from your hotel, if possible)

Site Contact: > LAVONNE RAVEN

- |    |  |  |
|----|--|--|
| 1. | E & E Emergency Response Center 24-hour Hot Line .....   | (716) 684-8940                         |
|    | Ecology and Environment, Inc., Corporate Safety Director |  |
|    | Paul Jonmaire .....                                      | (716) 684-8060 (office)                |
|    |  | (716) 655-1260 (home)                  |
| 2. | MEDTOX (Dr. Raymond Harbison) .....                      | (501) 221-0465 or (904) 462-3277, 3281 |
|    |  | (501) 370-8263 (24 hours)              |
| 3. | William Carberry (Regional Safety Coordinator) .....     | (206) 486-5751 (home)                  |
|    |  | (206) 624-9537 (office)                |
| 4. | Regional Manager, David Buecker .....                    | (206) 747-9264 (home)                  |
|    | FITOM, Jeffrey Villnow .....                             | (206) 854-6901 (home)                  |
|    | TATL, Richard Fullner .....                              | (206) 842-2540 (home)                  |
|    | ARCS IX/X Manager, Gerald McDonald .....                 | (206) 728-8179 (home)                  |
|    | Asst. FITOM, Andrew Hafferty .....                       | (206) 784-3996 (home)                  |
|    | ATATL, William Carberry .....                            | (206) 486-5751 (home)                  |
|    | <del>Asst. ARCS Manager, Mark Wells .....</del>          | <del>(206) 746-3764 (home)</del>       |

# MEDTOX HOTLINE

Twenty-four hour answering service: (501) 370-8263

What to report:

State: "This is an emergency!"

Your name, region, and site.

Telephone number to reach you.

Your location.

Name of person injured or exposed.

Nature of emergency.

Action taken.

A toxicologist, (Dr. Raymond Harbison or associate) will contact you. Repeat the information given to the answering service.

If a toxicologist does not return your call within 15 minutes, call the following persons in order until contact is made:

- a. 24 hour hotline - (716) 684-8940
- b. Corporate Safety Director - Paul Jonmaire - home # (716) 655-1260
- c. Assistant Corp. Safety Officer - Steven Sherman - home # (716) 688-0084

## EMERGENCY ROUTES

(NOTE: Field team must know route(s) prior to start of work)

Directions to Hospital (include map): > TAKE 2ND ST. NW TO AUBURN GENERAL HOSPITAL  
(1 BLOCK TO THE EAST OF SITE)

Emergency Egress Routes to Exit Site: > TAKE 2ND AVE NW

-----

# F. PERSONNEL PROTECTIVE GEAR

## Level A:

SCBA X  
Spare Air Tanks  
Cascade System  
Manifold System  
Neoprene Safety Boots X  
Protective Coveralls X  
(Type: >) SARANAX  
Surgical Gloves X  
Protective Outer Gloves X  
(Type: >) SOLVEX  
Protective Booties X  
Hard Hat with Face Shield X  
Radiation Dosimeter Badge X  
Rain Suit  
Butyl Apron

## Level B:

Ultra-Twin APR X  
Powered APR  
Back Mount APR  
Cartridges X  
(Type: >) GMC-A  
Five Min. Escape Mask  
Work Coveralls  
Surgical Gloves  
Protective Outer Gloves X  
(Type: >) SARANAX  
Neoprene Safety Boots X  
Protective Booties X  
Hard Hat with Face Shield X  
Radiation Dosimeter Badge X  
Rain Suit  
Steel-toe Boots  
Safety Glasses

## Level C:

Ultra-Twin APR (Available)  
Cartridges  
(Type: >)  
Five Min. Escape Mask  
Work Coveralls  
Surgical Gloves  
Protective Outer Gloves  
(Type: >)  
Neoprene Safety Boots  
Protective Booties  
Hard Hat with Face Shield  
Radiation Dosimeter Badge  
Rain Suit  
Steel-toe Boots  
Safety Glasses

## Level D:

Ultra-Twin APR X  
Powered APR  
Back Mount APR  
Cartridges X  
(Type: >) GMC-A  
Five Min. Escape Mask  
Work Coveralls  
Surgical Gloves  
Protective Outer Gloves X  
(Type: >) SARANAX  
Neoprene Safety Boots X  
Protective Booties X  
Hard Hat with Face Shield X  
Radiation Dosimeter Badge X  
Rain Suit  
Steel-toe Boots  
Safety Glasses

SAFETY MEETING

Name:

Time:

TDD No.:

NAME (Printed)

Signature

YIP CHUN

Yip Chun

Meeting Conducted By:

Safety Officer:

DAVE BYERS

Dave R Byers

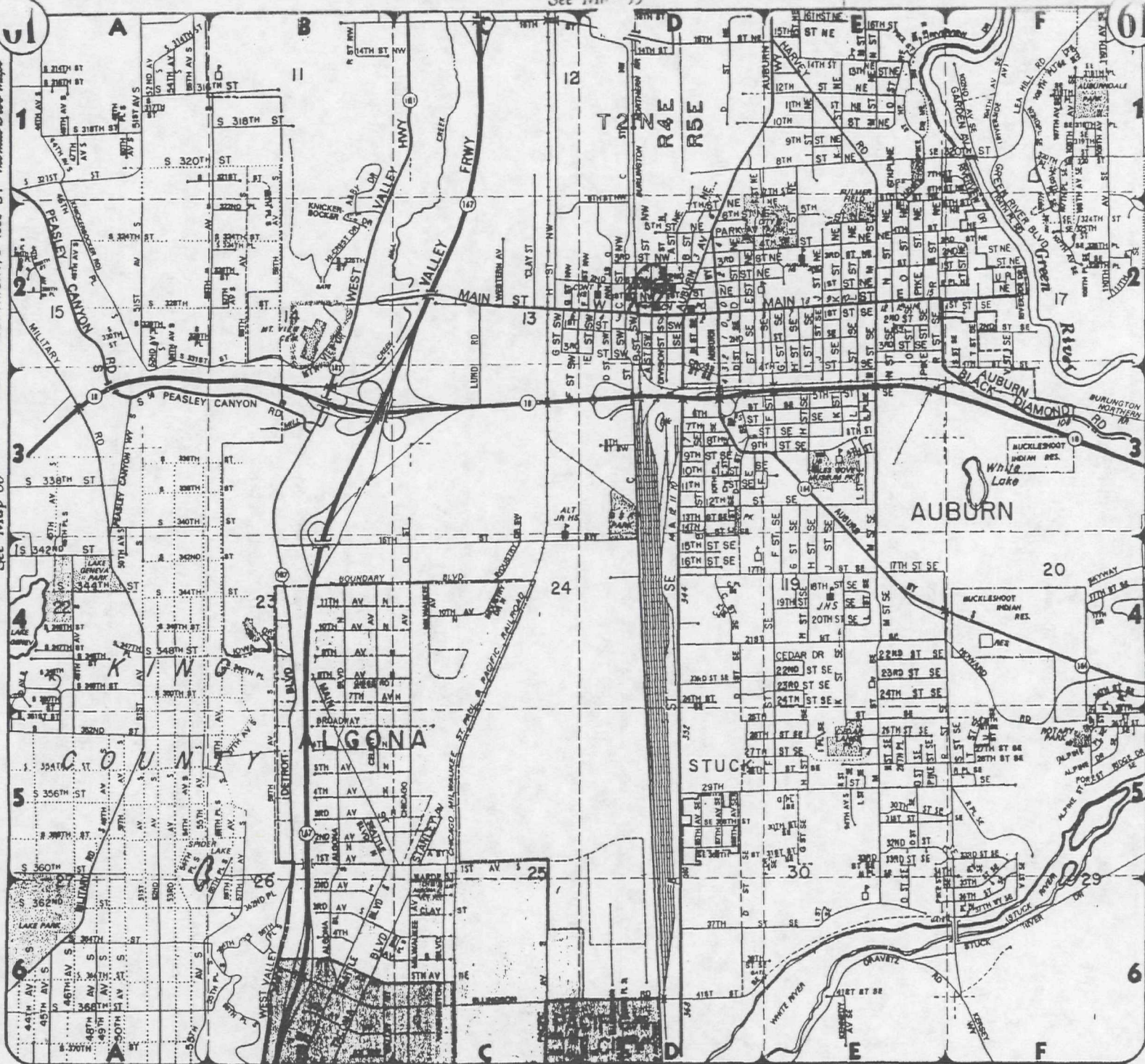
Team Leader:

DAVE SCHUCHARDT

Dave Schuchardt

See Map 60

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See Map 65

See Map 62

KING CO.

Ecology and Environment, Inc.  
Hazard Evaluation of Chemicals  
Region V - Chicago

CHEMICAL NAME: Xylene, all isomers

SYN : Dimethylbenzene, Xylol

CAS NO: 1330-20-7

FORMULA: C<sub>8</sub>H<sub>10</sub>(C<sub>13</sub>)<sub>2</sub>

DOT CLASS: FLAMMABLE

CHEMICAL PROPERTIES

liquid Boil Pt: — Ioniz Pot: 9.56eV ✓ FI Pt: 31.00°F  
K<sub>ow</sub>: 2.28 Melt Pt: — Vap Press: 9.00 mmHg LFL: 1.00%  
1.86 Frz Pt: — Odor Thr: 20.00ppm ✓ UFL: 7.00%  
aromatic odor, sweet  
EFFECT: strong oxidizers  
: practically insoluble in water

JB 5/16/90

TOXICOLOGICAL PROPERTIES

Limits: TLV-TWA (ACGIH): 100.00 ppm  
STEL: 150.00 ppm  
FEL (OSHA): 100.00 ppm  
IDLH: 1000.00 ppm

PROPERTIES :  
INHAL : hum TC10: 200ppm  
DERMAL : -  
ORAL : rat LD50: 4300 mg/kg  
CARCIN : -  
MUTAGEN : exper  
REPRO TOX: exper teratogen  
AQUATIC : -  
OTHER TOX: TARGET ORGANS: CNS, Eyes, GI Tract, Blood, Liver, Kidneys, Skin  
ROUTES OF EXP: Ingestion, Eye(Ocular), Dermal Absorption, Skin Contact, Inhalation

JB 5/16/90

PERSONAL PROTECTIVE MEASURES

RES : AFR: dusty/windy condit or known high concent or >1 but <5ppm; SOL: >5ppm  
TYPE : GMD-H or A-3 (RACAL)  
E CLOTHING: Coveralls: PE Tyvek Gloves: FVA, Viton (FVA degrades in water)  
CAUTIONS :

FIRST AID

IN: move to fresh air, artif resp if nec, SEEK MEDICAL ATTENTION  
: flush w/water 15 minutes, wash skin with soap/water, SEEK MEDICAL ATTENTION  
: DO NOT INDUCE VOMITING, SEEK MEDICAL ATTENTION IMMEDIATELY

SYMPTOMS

vapor cause dizziness, headache, cough, pulmonary distress/edema, nausea/vomiting, abdominal cramps, narcotic in high concent, mild skin irritant  
possible liver and/or kidney damage, pulmonary congestion. Ingestion may be fatal.

DISPOSAL, FIRE, SPILLS (see attached sheet)

: D FIRE: 6,7 LEAKS & SPILLS: 3,4,5,6,9  
TION PRODUCTS: CO, CO<sub>2</sub>

REFERENCES CONSULTED

NA Pocket Guide, Merck Index, Christ(vol. III), ACGIH TLV Booklet, RTECS  
REFERENCES: NIOSH Guides, Sigma-Aldrich

CLASSIFICATION: Hydrocarbons, Aromatic

LAST REVISION DATE:

~~5/16/90~~  
5/16/90

Ecology and Environment, Inc.  
Hazard Evaluation of Chemicals  
Region V - Chicago

CHEMICAL NAME: Toluene

SYN : Toluol, Methylbenzene

CAS NO: 108-88-3

FORMULA: C<sub>6</sub>H<sub>5</sub>CH<sub>3</sub>

DOT CLASS: 1294/FLAM LIQ 3

CHEMICAL PROPERTIES

liquid Boil Pt: 231.10°F Ionz Pot: ~~2.5~~ ✓ 1.5 ✓ FI Pt: 40.00°F  
14 Melt Pt: -109.00°F Vap Press: 22.00 mmHg LFL : 1.27%  
37 Frz Pt: -109.00°F Odor Thr : 1.20ppm ✓ UFL : 7.00%

agent, aromatic, benzene-like, sour

EACT: nitric acid, strong oxidizers, peroxides

: water-slightly

TOXICOLOGICAL PROPERTIES

Limits: TLV-TWA (ACGIH): 200.00 ✓ ppm PEL (OSHA): 100.00 ppm  
STEL: 150.00 ✓ ppm IDLH: 2000.00 ppm

PROPERTIES : CEILING: 300ppm, MAX PEAK: 500ppm/16h/31 shift, IRRITANT

INHAL : human Tclo: 200ppm

DERMAL : skin rbt: 1150 12124 mg/kg

ORAL : rat: 1050 5000mg/kg

CARCIN : exper

MUTAGEN : exper

REPRO TOX: exper teratogen

AQUATIC : 1180mg/1/96hr/sunfish/TLW/fresh water

OTHER TOX: TARGET ORGANS: CNS, Liver, Skin, Kidney

ROUTES OF EXP: Ingestion, Eye(Ocular), Skin Contact, Inhalation

JTB 5/18/90

PERSONAL PROTECTIVE MEASURES

WPS : AFR: dusty/windy condit or known high concent or >1 but <5ppm; SCBA: >5ppm

E TYPE : GMD-H

WE CLOTHING: Coverall: Saranex Gloves: Viton

CAUTIONS :

FIRST AID

IN: move to fresh air; artif resp if nec, SEEK MEDICAL ATTENTION

: flush w/water 15 minutes, SEEK MEDICAL ATTENTION

: DO NOT INDUCE VOMITING, SEEK MEDICAL ATTENTION IMMEDIATELY

SYMPTOMS

eye/respiratory/skin irritation, fatigue, weakness, confusion, headachedizziness, drowsiness, tingling skin, numbness,

s, vision disturbances, mild macrocytic anemia, narcotic in high concentrations, coma

drying & cracking of skin, fatty degeneration of the heart, liver, and adrenals, and hemorrhages, anemia

DISPOSAL, FIRE, SPILLS (see attached sheet)

2 D FIRE: 6,7

LEAKS & SPILLS: 3,4,5,6,9

ATION PRODUCTS: CLO<sub>2</sub>, CO

REFERENCES CONSULTED

IA Pocket Guide, Chris(vol. III), ACGIH TLV Booklet, RIEDS

REFERENCES: NIOSH Guides, Sigma-Aldrich

CLASSIFICATION: Aromatic Hydrocarbon

LAST REVISION DATE:

05/18/90

5/16/90